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Background

- There is higher smoking-prevalence and smoking-attributable mortality among individuals with a psychotic disorders (e.g., Schizophrenia, Schizoaffetive disorder) relative to those with other psychiatric disorders.
- Although smokers with psychotic disorders are willing to engage in smoking cessation, there are limited resources available to this population within mental health services.
- A growing number of studies have examined the efficacy of different behavioural and pharmacological tobacco treatment approaches among individuals with psychotic disorders.
- However, few studies in Canada have examined the effective of such approaches when applied within real-world mental health and addictions services.
- The objectives of our study are to: 1) describe the characteristics of smokers with a history of psychotic disorders as compared to other disorders (i.e., none vs. depression/anxiety) and 2) examine smoking cessation/reduction outcomes by history of psychiatric disorders.

Methods

- This study is based on a retrospective review of the charts of 982 participants of the Vancouver Coastal Health Mental Health and Addictions Services Tobacco Dependence Clinic (TDC) (between Sept 2007 and December 2012).
- Data on demographics, smoking and cessation attempt history, nicotine dependence scores, importance and confidence in quitting smoking, expired carbon monoxide (expCO) level, history of polysubstance use, and number of visits to the program (**see table 1**).
- The main outcomes of interest were: a) self-reported 7-day point-prevalence of smoking abstinence verified by expCO level, and b) smoking reduction (defined by a 50% or more reduction in average number of cigarettes smoked per day compared to baseline for those who did not achieve abstinence).

Table 1. Sample Characteristics by Psychiatric Disorder History (N = 982)

	Total (N = 982)		None[a] (n = 256)		Psychotic[a] (n = 109)		Depression/Anxiety[a] (n = 617)	
	n	%	n	%	n	%	n	%
Gender*(n = 977)**								
Female	398	40.7	73	28.6	42	38.9	283	46.1
Male	579	59.3	182	71.4	66	61.1	331	53.9
Has used any evidence-based cessation methods (i.e., NRT, Oral meds, and/or behavioural therapy) in the past								
No	414	42.2	113	44.1	48	44.0	253	41.0
Yes	568	57.8	143	55.9	61	56.0	364	59.0
History of Polysubstance Use								
None	130	13.2	36	14.1	20	18.3	74	12.0
One	329	33.5	84	32.8	40	36.7	205	33.2
Two	259	26.4	61	23.8	26	23.9	172	27.9
Three or more	264	26.9	75	29.3	23	21.1	166	26.9
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (years) (n = 981)	47.3	11.5	48.1	13.0	49.1	10.2	46.6	11.0
Age at smoking initiation*(n = 974)	15.2	5.7	15.0	5.4	17.1	8.0	14.9	5.4
Quit length at last attempt (n = 981)	2.7	1.6	2.7	1.6	2.7	1.8	2.7	1.5
Importance* (n = 944).	9.0	1.3	9.2	1.3	9.0	1.4	9.0	1.3
Confidence (n = 933)**	7.3	2.3	7.7	2.2	6.8	2.5	7.3	2.4
CPD* (n = 980)	20.0	10.8	19.3	11.6	23.4	15.1	19.7	9.4
FTND* (n = 959)	5.8	2.2	5.4	2.4	6.0	2.4	5.9	2.1
Baseline CO (n = 936)	20.0	13.5	20.5	16.3	20.5	13.1	19.7	12.3
Total number of visits to the programme	9.0	8.1	8.4	7.8	9.4	8.9	9.2	8.1

*p ≤ .05, **p ≤ .01, ****p ≤ .001

Note: Group differences are calculated using chi-square analyses for categorical and ordered categorical values, and using Analysis of Variance (ANOVA) tests For all ANOVA tests, Levene's test for equality of variance was applied and differences between groups were calculated post hoc using Bonferroni and LSD tests. In addition, Kruskal-Wallis Tests were employed for variables with unequal variances all p-values are based on the Kruskal-Wallis tests.
a. The None group includes 256 individuals with a substance use disorder or other addictive disorder without a mental illness. Psychotic group includes individuals with a history of only a psychotic disorder (i.e., schizophrenia, schizoaffective disorder, psychosis not otherwise specified, n=70) and those with a history or psychotic disorder and co-morbid depressive or anxiety disorder (n = 71)
The Depression/Anxiety group include individuals with a history of primarily a depressive disorder (i.e., major depressive disorder, bipolar disorder, n = 231), those with primarily an anxiety disorder (posttraumatic stress disorder, generalized anxiety disorder, agoraphobia, social anxiety disorder, n = 62), and individuals with a history of comorbid depressive and anxiety disorder (n = 324).

Brief Program Description

The TDC provides an individualized and tailored tobacco treatment programme for a duration of up to 26 weeks (i.e., 6-months).

Pharamcotherapy: NRT, varenicline, or bupropion is provided at no-cost to participants and is tailored to their particular need following a 'titration to effect' model. Hence it is not uncommon for participants to be provided with combination smoking cessation products.

Behavioural Therapy: Behavioural therapy consists of an initial mandatory weekly 8-session (1.5 hrs/session) structured, manualised group programme, followed by an optional up to 18 weeks of group therapy following a 'support group' style.

Table 2. Multivariate Predictors[a] of End of Treatment Smoking Cessation for Program Completer (n=543)[b] by History of Psychiatric disorder

	None (n = 136) [d]		Psychotic[c] (n = 54) [d]		Depressive/Anxiety[c] (n = 339)[d]	
	Odds Ratio	95%CI	Odds Ratio	95%CI	Odds Ratio	95%CI
Gender						
Female	.51	.24-1.10	-	-	-	-
Male (referent)						
Age at smoking initiation	-	-	-	-	1.02	.98-1.07
Quit length at last attempt	-	-	-	-	1.25**	1.07-1.45
Confidence	-	-	1.19	.91-1.56	-	-
FTND at baseline	-	-	-	-	.88	.78-.1.00
CO level at baseline	-	-	.92*	.87-.99	.99	.97-1.01
Total number of visits to the TDC	1.08**	1.02-1.14	1.08	.99-1.18	1.06**	1.03-1.10

*p ≤.05, **= p≤.01, *** = p ≤.001

[a] Only variables that were significantly predictive of smoking cessation at p≤ 1.0 in the univariate logistic regression in each stratified analysis were included in the multivariate analysis.
b. The program involves 8 weeks of a closed group therapy session followed by a further up to 18 weeks of optional support group. A program completer had to complete the 8 week closed group with no more than two weeks of excused absences to still have meaningful participation in the program.
c. The Psychotic group includes individuals with a history of only a psychotic disorder (i.e., schizophrenia, schizoaffective disorder, psychosis not otherwise specified, n=70) and those with a history or psychotic disorder and co-morbid depressive or anxiety disorder (n = 71). The Depression/Anxiety group include individuals with a history of primarily a depressive disorder (i.e., major depressive disorder, bipolar disorder, n = 231), those with primarily an anxiety disorder (posttraumatic stress disorder, generalized anxiety disorder, agoraphobia, social anxiety disorder, n = 62), and individuals with a history of comorbid depressive and anxiety disorder (n = 324).
[d] None, Hosmer-Lemeshow goodness-of-fit: n = 136, χ^2= 8.37 (DF=7), p=.301
[d] Psychotic Disorder; Hosmer-Lemeshow goodness-of-fit: n = 54, χ^2= 4.02 (DF=8), p=.856;
[d] Depressive/Anxiety, Hosmer-Lemeshow goodness-of-fit: n = 339, χ^2= 8.18 (DF=8), p=.416

Results

- As compared to those with no psychiatric disorder, individuals with psychotic disorders were more likely to have initiated smoking at an older age, report lower importance and confidence in quitting, smoke a greater number of cigarettes per day, and be more nicotine dependent.
- 35.7% of those with a psychotic disorder achieved smoking cessation (as compared to no psychiatric disorder = 45.6% vs. depressive/anxiety disorder = 39.6%, p =.350). Among programme completers (n = 543), there was a significant linear trend towards greater cessation with a greater number of visits to the programme in the total sample, among those without a psychiatric disorder, and among those with depressive/anxiety disorders (**see Figure 1**). However, this trend was non-significant (p<.061) among those with a psychotic disorder.
- 59.3% of individuals with a psychotic disorder achieved smoking reduction (as compared to no psychiatric disorder = 74.1% vs. depressive/anxiety = 67.3%, p =.370).
- In stratified multivariate analysis **(table 2),** predictors of smoking cessation were: a) having a greater number of visits to the programme among those **without** a psychiatric disorder, b) having a lower baseline expCO level among those with a **psychotic disorder**, and c) a greater length of abstinence at the last quit attempt and a greater number of visits to the programme among those with **depressive/anxiety disorders**.

Conclusions

- Individuals with a history of psychotic disorders are able to achieve smoking cessation when provided evidence-based treatment.
- However, tailored approaches specific to the needs of individuals with psychotic disorders may be warranted to enhance cessation outcomes.
- Future studies may be required to further understand how to tailor treatment outcomes and modify existing treatment approaches to optimize outcomes among individuals with a history of psychotic and other psychiatric disorders.

Dr Chizimuzo Okoli has received consultation fees from Vancouver Coastal Health Authority in the previous 12 months

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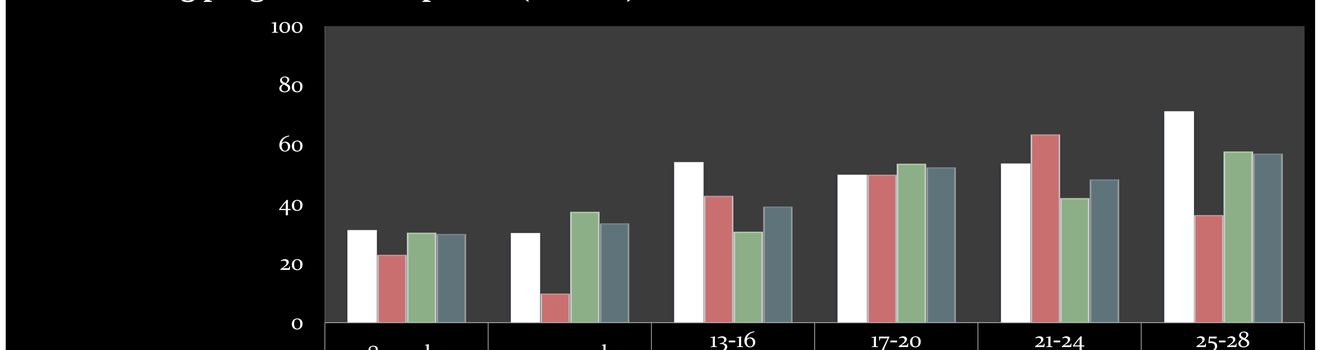
Figure 1. Smoking cessation outcomes by length of time in programme stratified by psychiatric illness among programme completers (n = 543)



**p<.01, ***p<.0001	8 weeks (n=130)	9-12 weeks (n=113)	13-16 weeks (n=107)	17-20 weeks (n=61)	21-24 weeks (n=62)	25-28 weeks (n=70)
None (n=136) **	31.4	30.4	54.3	50.0	53.8	71.4
Psychotic (n= 56)	23.1	10.0	42.9	50.0	63.6	36.4
Depressive/Anxiety (n=351)**	30.5	37.5	30.8	53.7	42.1	57.8
Total (n = 543) ***	30.0	33.6	39.3	52.5	48.4	57.1